

conform to current crash-testing requirements adopted by the NCDOT for bridge railings. These geometric and safety related items play a role in the bridge having a low sufficiency rating.

1.8.2 Existing No-Build Traffic Conditions

A traffic forecast for this project was developed by NCDOT for the 2030 design year, based upon a 2006 base year. The traffic forecast included turning movements for five unsignalized intersections along the US 64 study corridor. For this project, understanding operations during summer peak periods is critical for understanding overall traffic operations.

To examine this issue in greater detail, traffic counts from the automatic count station on the Lindsay C. Warren Bridge (ATR 2702), summarizing 2006 volumes in both directions, were utilized. Using the period from Memorial Day to Labor Day to represent the summer months, a conversion factor was used to estimate the Average Annual Daily Traffic (AADT) in the NCDOT traffic forecast. It was determined that the summer weekday traffic is essentially the same as the AADT and that summer weekend traffic is higher. These factors were applied to the traffic forecast volumes for use in the capacity analysis. Using these forecasts and traffic data, Level of Service (LOS) estimates for both overall roadway operations and specific intersections are discussed below.

1.8.2.1 Level of Service Concept

Level of service, or LOS, is a qualitative measure that characterizes operational conditions within a traffic stream and the perception of traffic service by motorists and passengers. The Transportation Research Board's *Highway Capacity Manual* generally describes these conditions in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels are used, ranging from A to F. For roadways, LOS A indicates no congestion, while LOS F represents traffic demand that exceeds roadway capacity and causes extreme delays. The engineering profession generally uses LOS D as a minimally acceptable operating condition, with LOS B desired in rural areas.

The LOS for signalized and unsignalized intersections is measured and evaluated differently. Although LOS for both is based on the average delay per vehicle, LOS at signalized intersections utilizes an average delay for all vehicles entering the intersection. In contrast, unsignalized LOS is estimated by examining only the delay for the most congested approach. This method is utilized because only those approaches with a stop sign or other form of intersection control are forced to stop at an unsignalized intersection. As all intersections on US 64 are unsignalized (discounting the signalized stop for the bridge swing-span), [Table 1-5](#) provides a general description of the various LOS categories and delay ranges for unsignalized intersections.

Since LOS at an unsignalized intersection reflects operations on the critical approach only (instead of delays to all traffic), LOS E or even LOS F are often observed at